IN THE CLAIMS:

Please cancel claims 1-54 of record and substitute the following new claims 55-98 in place thereof.

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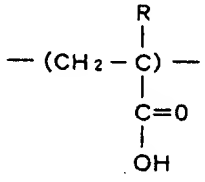
55. (New) A highly stable polymer comprising a polymer obtainable by reacting a material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound until an isocyanate group is vanished from a system of reaction (an ambience of chemical reaction), and then reacting the same with an alcohol.

56. (New) The highly stable polymer according to claim 55, wherein the material polymer is reacted with the isocyanate compound so as to be bonded with at least a part of the acidic functional group and/or the hydroxyl group via the isocyanate group of the isocyanate compound, and the acid anhydride part produced as a side product of the dehydration condensation of the acid functional groups by the function of the isocyanate compound is addition-reacted with the alcohol so as to provide the ester bond via the hydroxyl group of the alcohol.

57. (New) The highly stable polymer according to claim 55, wherein the principal chain comprises at least a component unit represented by the below-mentioned formula (1) and a component unit represented by the below-mentioned formula (2):

Formula (1)

Formula (



wherein R is hydrogen or an alkyl group having 1 to 5 carbon atoms, and R^1 is an alkylene group having 2 to 4 carbon atoms.

58. (New) The highly stable polymer according to claim 55, wherein the isocyanate compound has a reactive group other than the isocyanate group.

59. (New) The highly stable polymer according to claim 58, wherein the isocyanate group is a radical polymerizable group-containing isocyanate compound.

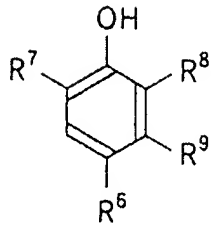
60. (New) The highly stable polymer according to claim 55, wherein the principal chain part of the highly stable resin is formed by polymerization of a compound having a double bond-containing group and an acidic functional group with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator.

61. (New) The highly stable polymer according to claim 60, wherein the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm is 60% or more.

62. (New) The highly stable polymer according to claim 60, wherein the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm is 50% or more.

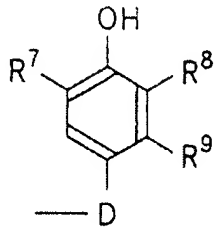
63. (New) The highly stable polymer according to claim 55, wherein the isocyanate compound is introduced in the principal chain part of the highly stable resin, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



wherein R^6 is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

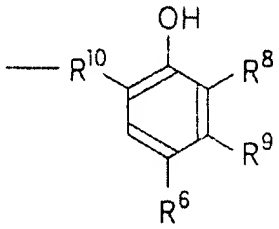
Formula (11)



B1

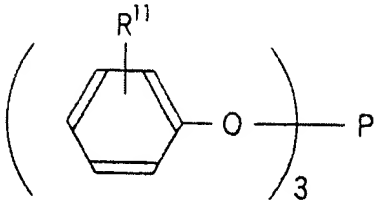
wherein D in the formula (11) is –S-, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^7 is hydrogen or an alkyl group having 1 to 10 carbon atoms, R^8 is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below-mentioned formula (12):

Formula (12)



wherein R^{10} in the formula (12) is an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^9 is hydrogen or an alkyl group having 1 to 10 carbon atoms however, at least one of R^7 and R^8 is a tert-butyl group, or an alkyl group having a cyclohexyl group, and substituents of the same numeral can either be same or different,

Formula (16)



wherein R^{11} is hydrogen or an alkyl group having to 20 carbon atoms.

64. (New) The highly stable polymer according to claim 63, wherein the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm is 60% or more.

65. (New) The highly stable polymer according to claim 63, wherein the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm is 50% or more.

66. (New) A production method for a highly stable polymer comprising the steps of reacting a material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound until an isocyanate group is vanished from a system of reaction (an ambience of chemical reaction), and then reacting the same with an alcohol.

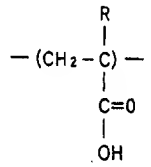
67. (New) The production method for a highly stable polymer according to claim 66, wherein the alcohol is added to the solution of the polymer obtained by reacting the material polymer and the isocyanate compound dissolved or dispersed in a solvent before viscosity rise of the solution or before completion of viscosity rise of the solution.

68. (New) The production method for a highly stable polymer according to claim 67, wherein the polymer applied with the alcohol treatment are left or heated for a predetermined time for maturation after the addition of the alcohol.

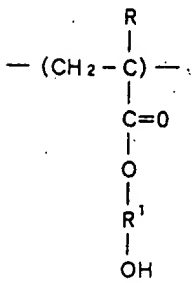
69. (New) The production method for a highly stable polymer according to claim 68, wherein the polymer is matured at 30 to 170 °C for a period within 72 hours.

70. (New) The production method for a highly stable polymer according to claim 66, wherein the principal chain of the material polymer comprises at least a component unit represented by the below-mentioned formula (1) and a component unit represented by the below-mentioned formula (2) :

Formula (1)



Formula (2)



wherein R is hydrogen or an alkyl group having 1 to 5 carbon atoms, and R^1 is an alkylene group having 2 to 4 carbon atoms.

71. (New) The production method for a highly stable polymer according to claim 66, wherein the isocyanate compound has a reactive group other than the isocyanate group.

72. (New) The production method for a highly stable polymer according to claim 71, wherein the isocyanate group is a radical polymerizable group-containing isocyanate compound.

73. (New) The production method for a highly stable polymer according to claim 66, wherein a compound having a double bond-containing group and an acidic functional group is reacted with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator so as to prepare the material polymer, and the material polymer is reacted with the isocyanate compound.

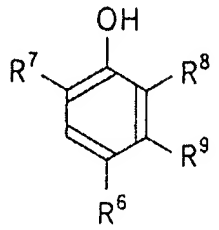
74. (New) The production method for a highly stable polymer according to claim 73, wherein a highly stable resin with the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more is obtained.

75. (New) The production method for a highly stable polymer according to claim 73, wherein a highly stable resin with the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more is obtained.

76. (New) The production method for a highly stable polymer according to claim 66, wherein the isocyanate compound is reacted with the material polymer, using a polymerization inhibitor selected from the group consisting of a phenol-based compound

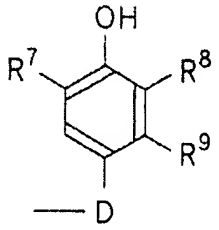
represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



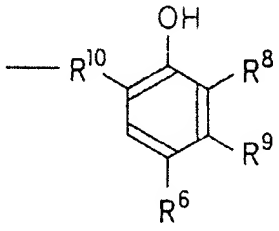
wherein R^6 is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



wherein D in the formula (11) is –S-, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^7 is hydrogen or an alkyl group having 1 to 10 carbon atoms, R^8 is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below:

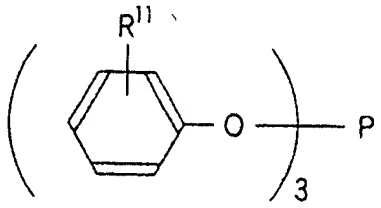
Formula (12)



wherein R^{10} in the formula (12) is a alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^9 is hydrogen or an alkyl group having 1 to 10 carbon atoms, however, at least one of R^7 and R^8 is a

tert-butyl group, or an alkyl group having a cyclohexyl group. Moreover, substituents of the same numeral can either be same or different,

Formula (16)



wherein R^{11} is hydrogen or an alkyl group having 1 to 20 carbon atoms.

77. (New) The production method for a highly stable polymer according to claim 76, wherein a highly stable resin with the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more is obtained.

78. (New) The production method for a highly stable polymer according to claim 76, wherein a highly stable resin with the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more is obtained.

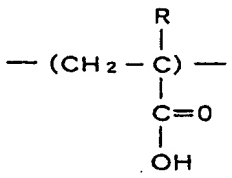
79. (New) A hardenable resin composition containing as the essential component a hardenable polymer obtainable by reacting material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group is vanished from a system of reaction (an ambience of chemical reaction), and then reacting the same with an alcohol.

80. (New) The hardenable resin composition according to claim 79, wherein the hardenable polymer is obtained by reacting the material polymer with the isocyanate compound and the alcohol, and further being left or heated for a predetermined time for maturation.

81. (New) The hardenable resin composition according to claim 79, containing as the essential component the hardenable polymer dissolved or dispersed in a coating solvent, wherein the hardenable polymer is obtained by reacting the material polymer with the isocyanate compound, and further reacting the same with ,an alcohol having a boiling point with a 75°C or less difference with respect to the boiling point of the coating solvent to be used and/or an evaporation rate with a 90 (n-BuOAc=100) or less difference with respect to the evaporation rate of the coating solvent.

82. (New) The hardenable resin composition according to claim 79, wherein, the principal chain of the material polymer comprises at least a component unit represented by the below-mentioned formula (1) and a component unit represented by the below mentioned formula (2) :

Formula (1)



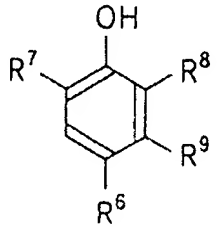
wherein R is hydrogen or an alkyl group having 1 to 5 carbon atoms, and R^1 is an alkylene group having 2 to 4 carbon atoms, and

the isocyanate compound is a radical polymerizable group-containing isocyanate compound.

83. (New) The hardenable resin composition according to claim 79, wherein the material polymer is formed by polymerization of a compound having a double bond-containing group and an acidic functional group with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator, and the material polymer is reacted

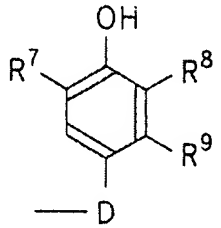
with the isocyanate compound, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



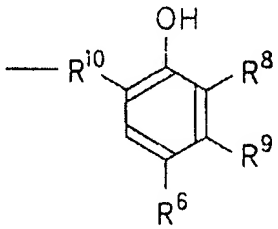
wherein R^6 is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



wherein D in the formula (11) is –S-, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^7 is hydrogen or an alkyl group having 1 to 10 carbon atoms, R^8 is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below-mentioned formula (12):

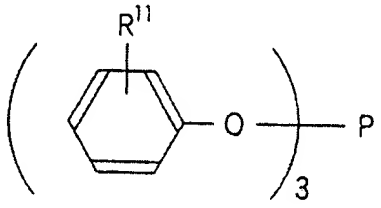
Formula (12)



wherein R^{10} in the formula (12) is an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^9 is hydrogen or an alkyl group having 1 to 10 carbon atoms, however, at least one of R^7 and R^8 is a

tert-butyl group, or an alkyl group having a cyclohexyl group, moreover, substituents of the same numeral can either be same or different,

Formula (16)



wherein R^{11} is hydrogen or an alkyl group having 1 to 20 carbon atoms.

84. (New) The hardenable resin composition according to claim 83, wherein the hardenable resin polymer has a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more.

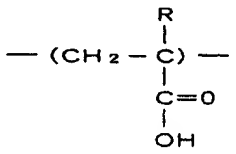
85. (New) The hardenable resin composition according to claim 83, wherein the hardenable resin polymer has a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more.

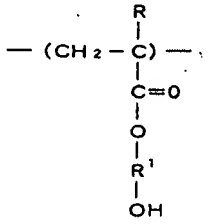
86. (New) A production method for a hardenable resin composition comprising the steps of preparing a polymer by reacting a material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group is vanished from a system of reaction (an ambience of chemical reaction), preparing a solution by dissolving or dispersing the prepared polymer in a solvent, adding an alcohol to the solution before viscosity rise of the solution or before completion of viscosity rise of the solution for reaction, preparing a hardenable polymer by leaving or heating the polymer applied with the alcohol treatment for a predetermined time for maturation, and mixing the obtained hardenable polymer with other components.

87. (New) The production method for a hardenable resin composition according to claim 86, wherein the principal chain of the material polymer comprises at least a component unit represented by the below-mentioned formula (1) and a component unit represented by the below-mentioned formula (2) :

Formula (1)

Form





wherein R is hydrogen or an alkyl group having 1 to 5 carbon atoms, and R^1 is an alkylene group having 2 to 4 carbon atoms,

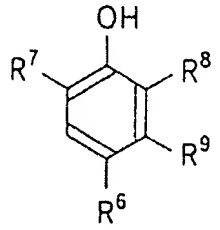
the isocyanate compound is a radical polymerizable group-containing isocyanate compound, and

the polymer is matured at 30 to 170 °C for a period within 72 hours.

88. (New) The production method for a hardenable resin composition according to claim 86, wherein the material polymer is prepared by polymerization of a compound having a double bond-containing group and an acidic functional group with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator, and the material

polymer is reacted with the isocyanate compound, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



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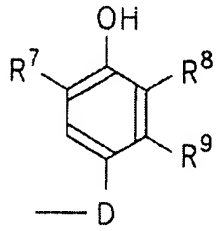
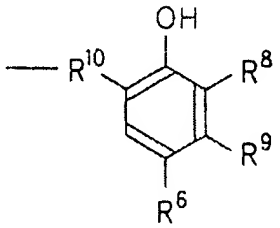
wherein R^6 is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



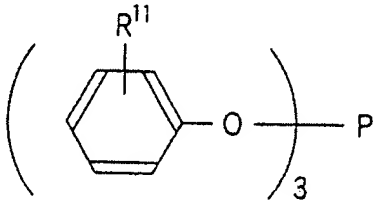
wherein D in the formula (11) is –S-, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^7 is hydrogen or an alkyl group having 1 to 10 carbon atoms, R^8 is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below-mentioned formula (12):

Formula (12)



wherein R^{10} in the formula (12) is an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^9 is hydrogen or an alkyl group having 1 to 10 carbon atoms, however, at least one of R^7 and R^8 is a tert-butyl group, or an alkyl group having a cyclohexyl group, moreover, substituents of the same numeral can either be same or different

Formula (16)



wherein R^{11} is hydrogen or an alkyl group having 1 to 20 carbon atoms.

89. (New) The production method for a hardenable resin composition according to claim 88, wherein a polymer having a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more is prepared by reacting the material polymer with an isocyanate compound, and applying the alcohol treatment to the polymer.

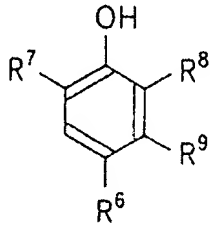
90. (New) The production method for a hardenable resin composition according to claim 88, wherein a polymer having a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more is prepared by reacting the material polymer with an isocyanate compound, and applying the alcohol treatment to the polymer.

91. (New) A production method for a hardenable resin composition containing as the essential component a hardenable polymer dissolved or dispersed in a coating solvent, comprising the steps of preparing a polymer by reacting a material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group, preparing a solution by dissolving or dispersing the prepared polymer in a solvent, adding an alcohol having a boiling point with a 75 °C or less

difference with respect to the boiling point of the coating solvent to be used and/or an evaporation rate with a 90(n-BuOAc=100) or less difference with respect to the evaporation rate of the coating solvent in the solution before viscosity rise of the solution or before completion of viscosity rise of the solution for reaction so as to prepare a hardenable polymer, and mixing the obtained hardenable polymer with the coating solvent.

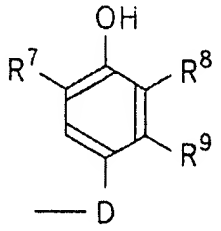
92. (New) The production method for a hardenable resin composition according to claim 91, wherein the material polymer is prepared by polymerization of a compound having a double bond-containing group and an acidic functional group with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator, and the material polymer is reacted with the isocyanate compound, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



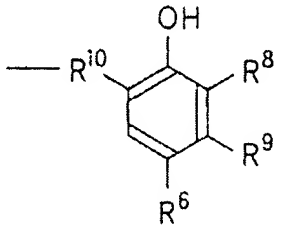
wherein R^6 is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



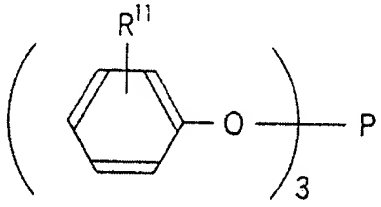
wherein D in the formula (11) is –S-, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^7 is hydrogen or an alkyl group having 1 to 10 carbon atoms, R^8 is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below-mentioned formula (12):

Formula (12)



wherein R^{10} in the formula (12) is an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^9 is hydrogen or an alkyl group having 1 to 10 carbon atoms, however, at least one of R^7 and R^8 is a tert-butyl group, or an alkyl group having a cyclohexyl group, moreover, substituents of the same numeral can either be same or different,

Formula (16)



wherein R^{11} is hydrogen or an alkyl group having 1 to 20 carbon atoms.

93. (New) The production method for a hardenable resin composition according to claim 92, wherein a polymer having a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more is prepared by reacting the material polymer with an isocyanate compound, and applying the alcohol treatment to the polymer.

94. (New) The production method for a hardenable resin composition according to claim 92, wherein a polymer having a light transmittance of a 3-methoxy butyl acetate

solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more is prepared by reacting the material polymer with an isocyanate compound, and applying the alcohol treatment to the polymer.

95. (New) A color filter comprising a transparent substrate, a coloring layer formed on the transparent substrate, and a protection film for covering the coloring layer, wherein at least one of the coloring layer and the protection layer is formed by hardening a hardenable resin composition containing as the essential component a hardenable polymer obtainable by reacting material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group is vanished from a system of reaction (an ambience of chemical reaction), and then reacting the same with an alcohol.

96. (New) A color filter comprising a transparent substrate, a coloring layer, and a spacer disposed at a position to be superimposed with a non-display part for maintaining a distance with respect to an electrode substrate to be faced therewith,

wherein the spacer is formed by hardening a hardenable resin composition containing as the essential component a hardenable polymer obtainable by reacting material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group is vanished from a system of reaction (an ambience of chemical reaction), and then reacting the same with an alcohol.

97. (New) A liquid crystal panel comprising a color filter and an electrode substrate faced with each other, with a liquid crystal compound sealed therebetween,

wherein the color filter comprises a transparent substrate, a coloring layer formed on the transparent substrate, and a protection film for covering the coloring layer, wherein at least one of the coloring layer and the protection layer is formed by hardening a hardenable resin composition containing as the essential component a hardenable polymer

obtainable by reacting material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group is vanished from a system of reaction (an ambience of chemical reaction), and then reacting the same with an alcohol.

98. (New) A liquid crystal panel comprising a color filter and an electrode substrate faced with each other, with a liquid crystal compound sealed therebetween,

wherein the color filter comprises a transparent substrate, a coloring layer, and a spacer disposed at a position to be superimposed with a non-display part for maintaining a distance with respect to an electrode substrate to be faced therewith,

wherein the spacer is formed by hardening a hardenable resin composition containing as the essential component a hardenable polymer obtainable by reacting material polymer having a principal chain including at least a component unit having an acidic functional group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group is vanished from a system of reaction (an ambience of chemical reaction), and then reacting the same with an alcohol.

REMARKS

Entry of this amendment and reconsideration of the application is respectfully requested under 37 CFR § 1.116 because it places the application in condition for immediate allowance, or, in the alternative, presents the rejected claims in better form for consideration on appeal.

A Request for Continued Examination is being filed with this amendment.

In the Office Action mailed on October 15, 2002, the Examiner rejected claims 1-41 under 35 U.S.C. §112, second paragraph, as being indefinite, and rejected claims 1-50 under 35 U.S.C. §102(b) as being anticipated by or, in the alternaticve, under 35 U.S.C. §103(a) as being obvious over Scheve et al. , U.S. Patent No. 4,717,643 ("Scheve").